The Clean-Technology Future of California

Prepared Remarks of
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California Public Utilities Commission

Keynote Address
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Ladies and Gentlemen, thank you for inviting me to speak to you today. And I especially thank Jason Simon for introducing me. I am pleased to be here, where money meets innovation! We Californians like to think that is what California is all about as we move into our green future.

I am one of five independent commissioners at the California Public Utilities Commission who regulate the investor-owned electric, gas, telephone, and water utilities of California. As only one of five, I cannot speak for the whole Commission. So this is my disclaimer: You should not take what I say to be the word of the Commission.

What I can do, and I will do, is offer some personal observations on the "state of play "in California and offer my assessment of what lies ahead.

I would like to put my comments today into four buckets all of which relate to California's clean tech future: *First*, renewable energy and California's Renewable Portfolio Standard; *Second*, California specific programs to promote the development of renewable energy projects; *Third*, California-specific energy efficiency and conservation programs; and *Finally*, to California's regulation of greenhouse gas emissions, which will be my overarching theme. Each of these topics has a somewhat different genesis, and some different variables, which even we at the Commission cannot always follow. But all serve to indicate California's commitment to a green future.

California's Renewable Portfolio Standard

As a matter of state policy we want to have a cleaner environment, and we want to reduce our greenhouse gas emissions. The governor, the legislature, and the CPUC all have signed on. And Californians have expressed a

willingness to “pay a little extra” for a better environment. How much extra is the key unknown variable. More about that later.

Renewable energy is cleaner than energy from fossil-based fuels. Cleaner even than natural gas. It allows emissions of greenhouse gas to be reduced. However, renewable energy is generally more expensive to produce than energy from traditional fossil-fired power plants. Also, most sources of renewable energy cannot be scheduled to deliver power when and where it is needed.

In order to move California in the right direction, our state has adopted a requirement that the electric energy procured on behalf of the customers of the investor-owned electric utilities include increasing percentages of renewable sources. We call this the Renewable Portfolio Standard (RPS). The RPS program requires electric corporations to increase procurement from eligible renewable energy resources by at least one-percent of their retail sales annually, until they reach 20-percent by 2010. Note: large hydro-electric generation, now about 14-

percent of electric energy generated in the state, is NOT included as a renewable source. Score one for the "No-More-Dams" folks.

Moreover, California now is considering reaching to an even higher goal – 33-percent by 2020. Our hearts are pure even though our economics may be a little suspect.

There are difficult problems with the RPS, and there will be much discussion before committing to ever higher targets.

- First, most sources of renewable energy do not deliver the power at your request; they deliver it whenever they are able, when the wind blows for wind turbines, and when the sun shines for solar. Even geothermal renewable energy operates best in a predetermined pattern, which is "base load," or, always on. By contrast, traditional power plants can be turned on and off. Many are able to operate with their output fluctuating to meet the load patterns. So, as we add more renewable capacity to the

system, how much more fossil-fired back-up capacity will be needed? This question becomes more critical as the renewable portion of the system grows.

- Next, the renewable energy, produced as available, has to be integrated into the system; that is, the system operators have to take the variable output of the renewable sources into account in their operation of all the other power plants, raising their costs. As the percentage of energy that comes from renewable sources rises, both the difficulty and the cost of integrating it into the system rise.

- Third, most of the available sources of renewable energy are located in places far from the load. The wind blows in the mountains; the sun shines in the desert. Wind turbines and solar farms require lots of land. The people, and their energy needs, are in the cities, mostly near the coast. So there is a need to build transmission capacity – at considerable cost – to bring the power to the people. Sometimes we

will have to build the transmission facilities before the power even becomes available. Transmission lines traverse the country-side across the landscape, sometimes through parks, but always in someone's "back yard."

- And finally, renewable energy is scarce and expensive. It is getting to be considerably more expensive than conventional energy. As we are getting closer to mandated deadlines, we are seeing the prices go up, along with ratepayer costs.

One of the tools we at the CPUC have used up to now to hold down the cost of renewable energy is something we call the "Market Price Referent" (MPR). It is an estimate of what power and energy would cost if they were delivered from a new conventional power plant. If the price of power from a new renewable energy contract is below the MPR, why then we can conclude it is reasonable. But if the cost of renewable energy is above the MPR, well, what should we conclude then?

The CPUC recently did approve such a contract, and I voted in favor of it despite my reservations. In effect, we are abandoning the MPR as a measure of what the people, through the CPUC, have heretofore thought a reasonable ceiling on the price of renewable energy. If the market price is higher than the MPR, then we have to be wary of how much higher it can go, and, more broadly, how much the people of California will tolerate in the pursuit of our green goals. In addition, once the market price for renewable energy is unhooked from the MPR, the utilities' ability to secure fair pricing is diminished and cost to the ratepayer goes up. How do we figure out what to subsidize and how much? Interesting question! On balance, we need to have great respect for higher costs.

Programs to Promote Production of Renewable Energy

Of course, the high price of renewable energy is only the beginning of the ways we are promoting (and paying for) a cleaner future.

- At the federal level, there is the federal Production Tax Credit (PTC) for renewable energy. This is a part of the federal tax code that subsidizes production of renewable energy. We also have a federal Investment tax credit. Both are set to expire this year and both are critical for the continued development of renewables generally, and for the continued viability of the California program. Watch this one!

- We also have renewable energy programs for Californians, largely based on the federal credits. For example, the CPUC, through its *California Solar Initiative*, will provide $2.2 Billion in incentives over the next decade for adding solar arrays to existing residential homes and existing and new commercial, industrial, and agricultural properties. The CPUC also manages a 10-year, $400 million program to encourage solar in new home construction through its *New Solar Homes Partnership*. The overall goal of these two

programs is to help build a self-sustaining photovoltaic, solar electricity market.

- Then, there is the benefit to residential customers with roof-top photovoltaic solar arrays get from "net metering", which lets the person who installs solar on his house effectively sell his production back to the electric company at residential tariff rates.

- For commercial and small industrial customers, there are other renewable energy programs. The CPUC's Self-Generation Incentive Program (SGIP) provides incentives to support existing, new, and emerging distributed energy resources. The SGIP provides rebates for qualifying distributed energy systems installed on the customer's side of the utility meter. For now, qualifying technologies include wind turbines and fuel cells.

- Finally, the California Public Utilities Commission has made new feed-in tariffs available for the

purchase of up to 480 MW of renewable generating capacity from small facilities throughout California. A feed-in tariff obligates a utility to purchase electricity at a tariff rate set by the CPUC. This type of arrangement presents a simple mechanism for small renewable generators to sell power to the utility at predefined terms and conditions, without contract negotiations.

All of these programs are helping California to be a cleaner place, a place that emits less greenhouse gas, that presents a smaller "carbon footprint." And all of them come at a cost. All of them depend on a carefully designed utility rate structure for support. The message to you is this: *"California's people and its government, from the governor, to the legislature, to the CPUC, are committed to a clean tech future. We have demonstrated that commitment with real dollars in real programs."*

Conservation and Efficiency Programs

Everything that I have discussed up to this point is about electricity production. But perhaps the most

immediate and important part of California's clean future rests on efficiency and conservation programs. It is our goal to find all of the cost-effective ways to be more efficient and conservative in our use of electricity before we build a single new power plant.

I am pleased to tell you that in this we have been very successful. While the nation's electricity use per capita has increased by about half since the 1970s, here in California it has remained about flat. This is an extraordinary achievement, and it has been brought about, at least in part, through programs paid for through consumer electric bills. The CPUC:

- Funds efficiency programs related to lighting and appliances; heating, ventilating and air-conditioning; and electric motors. The programs are available for retrofits and renovations as well as for new construction.

- Has demand-response programs, programs that are designed to reduce electric consumption at times

when the system is most stressed, and when additional electric production is most costly. Demand Response programs will be facilitated through our Advanced Metering Initiative – a program to install more sophisticated electric meters for every customer.

Let me at this point remind you that California's electric utility rates are among the highest in the nation. In part they are high because of our resource base; there is no coal to be mined here. But it is also partly because of all of these programs.

Regulation of GHG Emissions

Why does California subject itself to these costs? The ultimate goal, and the reason we Californians are pushing so hard to reduce electric consumption and increase the portion of electric production from renewable sources, is that both strategies will help us to reduce the production of greenhouse gas. The legislature and the governor have made the ultimate goal explicit in a piece of legislation passed two years ago, AB-32 – the "Global Warming

Solutions Act of 2006." The law requires that by the year 2020 GHG emissions be reduced to 1990 levels, about a 25-percent decrease from what might be expected if we continued on our current path, and about 20-persent below where we are now. And there is to be a reduction by 80-percent by the year 2050.

The California Air Resources Board (ARB) is the agency for regulating GHG emissions, and it must determine the process for meeting the goals, which cover all sources of emissions, not just the emissions in the electric sector. Therefore, the CPUC has only a small part for now: Advising the ARB.

The advice we have provided to date has been that the best way to regulate GHG emissions is through some sort of Cap-&-Trade mechanism.

This topic, how a Cap & Trade system should be set up and should operate, is much larger than we have time for today. Ultimately, I think we will find that it is simpler, more effective, less subject to manipulation, and less costly

to society overall than other strategies. The key remains allocation, a subject not yet emerged from the political cauldron.

There are going to be difficulties in imposing any form of GHG regulation and reduction. One is the condition of the economy as these new burdens are put in place.

Today we are seeing substantially reduced economic growth in the US. It is possible that we are seeing negative growth, and we may well see recession. So these are not the best of times to add additional burdens onto the backs of ratepayers.

In instituting a new regulatory system for GHG emissions – whether we choose a Cap & Trade system or any other system – it will be important to do so in a deliberate and gradual way. Regulation of GHG will be a new cost to the economy, and ultimately it will be a high cost – much higher than the cost of our renewable energy program, our solar initiative programs, our efficiency

programs, and our demand reduction programs. The cost of regulating GHG will dwarf these other costs and create significant economic dislocations. There will be no escaping the cost. A clean technical economy will not come for free. Out of this disruption, as always, will come new opportunities and new perils.

Conclusion and "Take-Away" Message

Despite the risks and the costs, California is committed to renewable energy and the mitigation of green house gases. The commitment is of long standing, and I expect it to last well into the future. California is committed to programs that encourage solar installation at existing homes and in new homes. California is committed to programs that encourage distributed generation at small commercial and industrial sites. California is committed to energy efficiency and conservation.

We have seen that Californians are willing to "tax" themselves to pay for the development of a very aggressive renewable energy portfolio. We have dedicated money to encouraging development of the solar industry and other

associated industries. And we have encouraged, with real money, efficiency programs and conservation programs. These programs are ongoing, and I expect them to last well into the future.

With regard to GHG, California has shown a strong commitment to reducing or emissions. It is my expectation that we will develop specific workable programs – likely including elements of Cap & Trade – and that ARB will institute them in an intelligent and reasonable manner. I expect there is little reason to worry that California will back away from these commitments.

California green innovation is alive and well, and growing fast. California policies will continue to make that growth and innovation a top priority. Finally, in addition to the policies and programs discussed, there are others that are dedicated to technical solutions that may also affect our green future. We may see a California Institute for Climate Solutions. There is also the Clean Tech Center at the University of California at Davis. Located in California, but national – even international – in scope is the Electric

Power Research Institute. Assuming a reasonable federal tax policy, I believe the investment climate for clean technology in California is very good, and should remain good for a long time.

Thank you very much.